MARKED-UP VERSION OF CORRECTED ENGLISH LANGUAGE TRANSLATION OF ARTICLE 19 AMENDMENT

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1. Rational AG; 2 Frima SA

Response to the communication of March 24, 2005:

A new set of patent claims of replacement pages 21 to 30 according to Article 19 PCT are submitted herewith. In this set of claims, the new Patent Claims 1 to 15 correspond to the originally submitted Patent Claims 1 to 15. The new Patent Claim 16 was changed in comparison to the originally submitted Patent Claim 16 in that it is no longer formulated as an independent patent claim, but it is dependent on one of Patent Claims 1 to 15. Furthermore, the characteristics of the originally submitted Patent Claim 17 is included into the new Patent Claim 16. The new Patent Claims 17 to 45 correspond essentially to the original Patent Claims 18 to 46, whereby only the reference to the previous patent claims was adjusted.

The Applicant reserves the right to submit a partial application, preferably in a regional or national phase, which is aimed at a heating element which has a heating element layer with a multiple number of individual heating resistors, as it is specifically claimed with the originally submitted Patent Claim 16 and with the original withdrawn patent claims.

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SIGNATURE
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Attachment: Copy of these new claims, in duplicate.

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Patent Claims

1. Heating element (1) for a cooking appliance, especially for direct or indirect electrical heating of at least one cooking product, comprising at least one supporting layer (2), at least one heating element layer (8) which lies directly or indirectly [[on]] against the supporting layer (2) at least in sections and at least one electrical contact or conducting element (24), characterized by
at least one elastic arresting element (12), which is connected or can be connected to the electrical contact or conducting element (24), whereby the electrical contact or conducting element (24) can be brought into contact using the elastic force of the elastic arresting element (12), at least intermittently, with at least one heating resistor (806, 806', 807, 807') and/or with at least one contact location (830, 830') of the heating element layer (8).

2. Heating element (1) according to Claim 1, characterized by the fact that
this heating element (1) is represented especially by an essentially flat heating plate or by heating that is completely or in regions essentially tubular, especially cylindrical.

3. Heating element (1) according to Claim 1 or 2, characterized by the fact that
between the supporting layer (2) and the heating element layer (8) at least in sections at least one separating layer, is present preferably comprising at least one graphite layer (6) to make the heat input into the supporting layer (2) at least partially uniform, and/or
on the side of the heating element layer (8), which is away from the supporting layer (2) and/or between the heating element layer (8) and the elastic arresting element (12), at least in sections, at least one mechanical buffer layer is present, preferably comprising a mica layer (10) and/or at least a first thermal insulating layer, preferably comprising a mica layer.

4. Heating element (1) according to one of the previous claims, characterized by at least one pressing means, preferably comprising a pressing plate (4), with which the elastic arresting element, preferably comprising an elastic element plate (12), the mechanical buffer layer (10), the first thermal insulating layer, the heating element layer (8) and/or the separating layer (6), can be pressed or is/are pressed against the supporting layer (2) for making the pressing strength onto the supporting layer (2)

and/or of the heat input into the supporting layer (2) uniform at least in regions.

5. Heating element (1) according to one of the previous claims, characterized by the fact that
the mechanical buffer layer (10), the first thermal insulating layer and/or the pressing means (4) have at least one outlet (22, 30) for the contact or conducting element (24) in the region of at least one second section (28) of the elastic arresting element (12).

6. Heating element (1) according to one of the previous claims, characterized by the fact that
the elastic arresting element (12) has at least one first section (26) which is between, on the one hand, the heating element layer (8), the first thermal insulating layer and/or the mechanical buffer layer (10) and, on the other hand, the pressing means (4), and a second free section (28), which is connected to the first section (26), the free section being able to be connected directly or indirectly, especially through a third section, to the contact or conducting element (24), whereby the section (28) lies preferably in the second region of the outlet (22, 30).

7. Heating element (1) according to Claim 6, characterized by
at least one fourth section (34) which is attached to the second and/or third section (28) of the elastic arresting element (12) and/or the contact or conducting element (24), whereby the fourth section (34) is preferably connected or can be connected to the mechanical buffer layer (10), the first thermal insulating layer and/or the pressing means (4).

8. Heating element (1) according to one of the previous claims, characterized by the fact that
the contact or conducting element (24) can be connected through an insulator, preferably in the form of an insulating sleeve (20), to the elastic arresting element (12), especially to the second, third and fourth section (28, 34) thereof.

9. Heating element (1) according to one of the previous claims, characterized by the fact that

the supporting layer (2) is made completely or partially of stainless steel and/or the mechanical buffer layer (10) is made completely or partially of mica.

10. Heating element (1) according to one of the previous claims, characterized by the fact that
this has, looking from the supporting layer (2) in the direction of the elastic arresting element (12), as supporting layer (2) or as heating element layer (8), at least in sections, at least one stainless steel layer and/or, at least in sections, at least one ceramic layer as well as furthermore at least in sections at least one layer with electrical heating resistors (806, 806', 807, 807') and/or at least in sections at least one glass layer.

11. Heating element (1) according to one of Claims 1 to 9, characterized by the fact that the supporting layer (2), viewed from the free outside surface, has at least one layer containing at least one heat conducting metal, especially steel, at least one layer containing at least one metal with good thermal conductivity, especially copper, and at least one second insulating layer.

12. Heating element (1) according to one of Claims 1 to 9, characterized by the fact that the ~~carrier~~ supporting layer (2), viewed from the free outside surface, has at least one layer containing at least one metal with good thermal conductivity, especially copper, at least one layer containing at least one metal with poor thermal conductivity, especially steel, and at least one second insulating layer.

13. Heating element (1) according to one of Claims 1 to 9, characterized by the fact that the supporting layer (2), viewed from the free outside surface, has at least one electrically insulating ceramic layer, at least one electrically conducting ceramic layer and/or at least one second insulating layer.

14. Heating element (1) according to one of the previous claims, characterized by the fact that the heating element layer (8) is designed as a thick [[layer]] film or as a thin [[layer]] film.

15. Heating element (1) according to Claim 14, characterized by the fact that the heating element layer (8) can be produced by serigraphy or by a printing process, preferably as a thick [[layer]] film.

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16. Heating element (1) according to one of the previous claims, characterized by the fact that the heating element layer (8) has a ~~multiple number~~ plurality of individual heating resistors (806, 806', 807, 807'), which are arranged in at least two heating tracks (804, 804', 805, 805') in such a way that the heating resistors within each heating track (804, 804', 805, 805') are ~~switched~~ connected electrically parallel to one another and that the heating tracks (804, 804', 805, 805') are ~~switched~~ connected in series to one another, and all heating resistors (806, 806', 807, 807') can be supplied simultaneously with electrical energy, whereby at least two different heating resistors have different heating powers and/or the heating resistors are arranged on the heating element layer (8) at different distances to one another, at least in regions and the heating resistors (806, 806', 807, 807') are produced [[on]] as a thick [[layer]] film.

17. Heating element (1) according to Claim 16, characterized by the fact that the heating resistors (806, 806', 807, 807') can be produced on the heating element layer (8) with a serigraphic or a printing process.

18. Heating element (1) according to one of Claims 16 to 17, characterized by the fact that at least two heating resistors with different heating powers have different electrical resistances, especially different geometric dimensions and/or comprise different materials, especially materials with different dopings.

19. Heating element (1) according to Claim 18, characterized by the fact that at least two heating resistors with different surface areas have different peripheral shapes, especially at least one heating resistor has an essentially polygonal, especially trapezoidal, triangular, square, rectangular and/or hexagonal peripheral shape, different peripheral lengths, different side lengths, especially different widths and/or lengths and/or different thicknesses.

20. Heating element (1) according to one of Claims 16 to 19, characterized by the fact that the heating power and/or the distance of the heating resistors is adjusted at least in regions preferably over the complete heating element to a pressing strength of the heating element layer (8) onto the supporting layer (2) present at least in regions, to a predetermined heating power density distribution within the heating element (8) which is present at least in regions, especially as a function of a local thermal

conductivity of the supporting layer (2), and/or to a heat density distribution within the supporting layer (2) predetermined at least in regions.

21. Heating element (1) according to Claim 20, characterized by the fact that the heating power of a first heating resistor which is arranged in a first region of the heating element layer (8) with a first pressing strength of the heating element layer (8) onto the supporting layer (2), is smaller than the heating power of at least one second heating resistor, which is arranged in a second region with a second pressing strength of the heating element layer (8) onto the supporting layer (2), which is smaller in comparison to the first pressing strength and/or the distance of two heating resistors to one another is larger in the first region than the distance between two heating resistors to one another in the second region.

22. Heating element (1) according to Claim 21, characterized by the fact that the first region is located near at least one, preferably bordering at least one attachment or pressing location, preferably in the form of an opening (822, 824, 826, 828) for at least partial leadthrough or partial penetration of an attachment device for applying the heating element layer (8) [[onto]] <u>to</u> the supporting layer (2), and/or the second region is located further removed in comparison to the first region from at least one attachment or pressing location, especially not bordering on at least one of these.

23. Heating element (1) according to one of Claims 16 to 22, characterized by the fact the heating power of a third heating resistor which is located in a third region of the heating element layer with a first heating power density of the heating element layer, is smaller than the heating power of at least one fourth heating resistor which is located in a fourth region with a second heating power density of the heating element layer which is smaller in comparison to the first heating power density, and/or the distance of two third heating resistors in the third region is larger than the distance of two fourth heating resistors in the fourth region.

24. Heating element (1) according to Claim 23, characterized by the fact that the third region of the heating element layer is located near at least one, preferably bordering at least one first region of the supporting layer with a first thermal conductivity and/or with a first heat density and that the fourth region of the heating element layer is located near at least one, preferably bordering at least one second region of

the supporting layer with a second thermal conductivity which is smaller in comparison to the first thermal conductivity and/or with a heat density larger in comparison to the first heat density.

25. Heating element (1) according to one of Claims 16 to 24, characterized by the fact that the electrical heating resistors (806, 806', 807, 807') of a heating track (804, 804', 805, 805') have essentially the same heating power, essentially the same geometric dimensions, are essentially at the same distance from one another and/or are made essentially of the same materials.

26. Heating element (1) according to one of the previous claims, characterized by the fact that the separating layer (6), the heating element layer (8), the mechanical buffer layer (10), the first thermal insulating layer, the elastic arresting element (12) and/or the pressing means (4) are designed as one element.

27. Heating element according to one of the previous claims, characterized by the fact that the pressing means (4), the elastic arresting element (12), the mechanical buffer layer (10), the first thermal insulating layer, the heating element layer (8) and/or the separating layer (6) can be joined to one another separably or in a fixed manner, especially by means of adhesion, preferably by means of an adhesive.

28. Heating element (1) according to one of the previous claims, characterized by the fact that the heating tracks (804, 804', 805, 805') each have a large number of heating resistors (806, 806', 807, 807'), at least pair-wise neighboring one another, whereby the heating resistors (806, 806', 807, 807') have a surface which is limited at least partially, preferably in a plane, by first and second side edges (810, 820), whereby two neighboring heating resistors (806, 806', 807, 807') have facing neighboring first side edges (810.1, 810.2, 810.1', 810.2') in order to produce electrical parallel circuits and these are at least partially at a distance from one another and/or are electrically insulated especially through at least one insulating intermediate layer or electrical insulation (812).

29. Heating element (1) according to Claim 28, characterized by the fact that two facing neighboring second side edges (820.1, 820.2) of the heating resistors (806, 806', 807, 807') of neighboring first and second heating tracks (804, 804', 805, 805'), in order to achieve electrical series connection of the heating tracks, have at least

partially at least one first electrically conducting means, especially in the form of at least one first electrical conducting path (808) lying against the, especially each, second side edge (820.1) of the heating resistors (806, 807) of the first heating track (804), and against the, especially against each, second side edge (820.2) of the heating resistors (806', 807') of the second heating track (804'), and can be connected to one another or are connected to one another, whereby, using a first electrically conducting means (808), an electric current can be conducted through electrical heating resistors (806, 807, 806', 807') of neighboring first and second heating tracks (804, 804', 805, 805').

30. Heating element (1) according to one of the previous claims, characterized by at least one second electrically conducting means (814, 816) that connects at least two, especially all, second side edges (820) of heating resistors (806, 807) of an outer heating track (804, 805) to one another in a connecting manner, which are especially not neighboring a first or second side edge of a heating resistor, whereby at least one second electrically conducting means (814, 816) has especially at least one contact position (830, 830') and/or is in working relationship with a contact position (830, 830').

31. Heating element (1) according to one of the previous claims, characterized by at least one third electrically conducting means to at least one, especially each, first and/or second side edge of a heating resistor of at least one first outer heating track, which is especially not neighboring a first or second side edge of a heating resistor of a first or second heating track, and especially has no insulating intermediate layer.

32. Heating element (1) according to one of Claims 29 to 31, characterized by the fact that the first, second and/or third electrically conducting means (808, 814, 816) comprise at least one electrical material with high conductivity, especially silver or copper.

33. Heating element (1) according to one of Claims 16 to 32, characterized by the fact that the neighboring heating tracks (804, 804', 805, 805') are arranged essentially parallel to one another and/or at least one heating track (804, 804', 805, 805') is arranged along a straight, curved or circular path.

34. Heating element (1) according to one of Claims 16 to 33, characterized by the fact that he heating tracks (804, 804', 805, 805') have different dimensions.

35. Heating element (1, 1') according to one of Claims 16 to 34, characterized by the fact that each heating track (804, 804', 805, 805') has at least three, especially at least five, electrical heating resistors (806, 806', 807, 807') and/or at least three, especially at least five, heating tracks (804, 804', 805, 805') which can be connected to one another preferably through at least one electrically conducting means (808) and can be connected electrically to a power source through at least two contact positions (830, 830').

36. Cooking appliance comprising at least one heating element (1) according to one of the previous claims.

37. Cooking appliance according to Claim 36, characterized by the fact that at least one heating element (1), preferably all heating elements, can be secured separably on the cooking appliance, especially through a screw connection.

38. Cooking appliance according to Claim 36 or 37, characterized by a control and/or regulating unit which is especially in working connection with at least one, especially all, heating element(s) (1) and/or with at least one, especially all, electrical heating resistor(s) (806, 806', 807, 807'), and/or with at least one sensor.

39. Cooking appliance according to Claim 38, characterized by the fact that through the control and/or regulating unit, the heating power of the heating element, preferably of the individual heating resistors and/or at least of two groups of heating resistors can be controlled and/or regulated especially as a function of at least one characteristic quantity that can be detected especially through a sensor, such as temperature, moisture, degree of browning of a cooking product, weight of a cooking product, size of a cooking product, type of a cooking product and/or similar.

40. Method for the production of a heating element layer (8) of a heating element (1) according to one of Claims 1 to 35, comprising the steps of
    - preparing a substrate; and

- applying heating resistors and/or electrical conducting paths with a serigraphic technique.

41. Method according to Claim 40, characterized by the fact that a covering layer is subsequently applied at least in regions.

42. Method according to Claim 40 or 41, characterized by the fact that the substrate is provided with at least one electrically conducting material, preferably a metal, especially stainless steel, glass, ceramic and/or plastic and/or, before applying the heating resistors, at least in regions at least one thermally- and/or electrically insulating layer is applied onto the substrate.

43. Method according to one of Claims 40 to 42, characterized by the fact that the thermally- and/or electrically insulating layer is provided with at least one ceramic material and/or at least one glass material.

44. Method according to one of Claims 40 to 43, characterized by the fact that the covering layer is provided with an electrically insulating material and/or a material which protects against mechanical influences, preferably with glass and/or a protecting varnish.

45. Method according to one of Claims 40 to 44, characterized by the fact that the heating power, the electrical resistance and/or the distance of the heating resistors to one another is adjusted by dimensioning the geometric measurements of the heating resistors.